

ABSTRACT

An actively cooled system includes a heat generating device and at least one heat transfer device. The heat transfer device includes a refrigerant loop including a compressor for providing a superheated vapor state from a vapor stream, a condenser comprising a membrane coupled to an actuator, the condenser including a condensing surface for condensing the superheated vapor into a plurality of droplets, and an evaporator for receiving the droplets. An expansion structure is interposed between the condenser and the evaporator, wherein the membrane ejects the plurality of droplets toward the evaporator during refrigerant cycle intervals when the expansion structure is open. At least a portion of the heat generating device is in thermal contact with the evaporator.